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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,456	10/31/2006	Marcus Brian Mayhall Fenton	C049105/0225761	8485

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BRYAN CAVE LLP  
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New York, NY 10104

EXAMINER
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CERNOCH, STEVEN MICHAEL

ART UNIT	PAPER NUMBER
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3752

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06/26/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,456	<b>Applicant(s)</b> FENTON ET AL.	
	<b>Examiner</b> STEVEN CERNOCH	<b>Art Unit</b> 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-89 is/are pending in the application.
- 4a) Of the above claim(s) 1-51 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 52-89 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/24/2009</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “working nozzle outer surface” and working nozzle inner surface” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 52 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Recited in claim 52 are a "working nozzle outer surface" and a "working nozzle inner surface" however, these are considered generally confusing by the Examiner and therefore this claim will be rejected as best understood.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 52-65, 67-70, 72-83, 84-87 and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (US Pat No 5,779,159) in view of Kinney et al. (US Pat No 1,289,812).

Re claim 52, Williams et al. shows an apparatus for generating a mist (Fig. 1, N) comprising: a housing (B) having a plurality of interior walls, at least one of the plurality of interior walls defining a passageway (28) along a longitudinal center axis, the passageway having an inlet (I), a plenum (PM) adjacent to the inlet, a portion (18) adjacent to the plenum, and an outlet (under N), the at least one of the plurality of interior walls being tapered outwardly with respect to the axis along the portion; a protrusion (S) with a solid interior located proximate the portion, the protrusion having an outer surface tapered outwardly with respect to the axis; a transport nozzle (O) defined between: the at least one of the plurality of interior walls tapered outwardly with respect to the axis along the portion, and the outer surface tapered outwardly of the protrusion; a working nozzle (PO) being defined by other of the plurality of interior walls of the housing, the working nozzle being coincident the transport nozzle so that a working fluid communicated to the working nozzle mixes (column 1, lines 34-37) with a transport fluid exiting the transport nozzle; and a working fluid inlet (22) disposed along the housing in communication with the working nozzle; wherein the working nozzle (PO) is defined by a working nozzle outer surface facing inward toward the axis and a working nozzle inner surface facing outward away from the axis.

Williams et al. does not show wherein at least part of the working nozzle outer surface converges toward the axis in a direction along the axis toward the outlet.

However, Kinney et al. does teach wherein wherein at least part of the working nozzle outer surface (Fig. 2, 13) converges toward the axis in a direction along the axis toward the outlet.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the working nozzle of Williams et al. with the working nozzle of Kinney et al. to regulate the feed of material (page 2, lines 33-34).

Re claim 53, Williams et al. shows a chamber (Fig. 1, nearest N) adjacent the portion wherein the transport nozzle exits into the chamber and the working nozzle exits into the chamber so that the working fluid communicated to the working nozzle mixes in the chamber with the transport fluid exiting the transport nozzle.

Re claim 54, Williams et al. shows an apparatus for generating a mist (Fig. 1, N), the apparatus having an apparatus axis, the apparatus comprising: a first fluid passage (P) having a first fluid inlet (22) and a first fluid outlet (PO); the first fluid passage defining a working nozzle (PO); the first annular portion having a first outer surface facing inward toward the apparatus axis and a first inner surface facing outward away from the apparatus axis; the first fluid passage comprising a first annular portion concentric with the apparatus axis; a second fluid passage (W) having a second fluid inlet (I) and a second fluid outlet (O); a protrusion (S) located in the second fluid passage to define an annular transport nozzle (O) with a second inner surface facing outward away from the apparatus axis and a second outer surface facing inward toward the apparatus axis, that are both concentric to the apparatus axis and substantially frustoconical in shape and wherein the second inner surface and the second outer surface both diverge away from the apparatus axis in the direction toward the second fluid outlet.

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Williams et al. does not teach wherein at least part of the first outer surface converges toward the apparatus axis in a direction toward the first fluid outlet.

However, Kinney et al. shows wherein at least part of the first outer surface (Fig. 2, 16) converges toward the apparatus axis in a direction toward the first fluid outlet.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the working nozzle of Williams et al. with the working nozzle of Kinney et al. to regulate the feed of material (page 2, lines 33-34).

Re claims 55 & 74, Williams et al. shows a transport plenum (Fig. 1, PM) within the apparatus and located in the second fluid passage (SS) between the second fluid inlet (I) and the transport nozzle (O).

Re claims 56, 58, 75 & 77, Williams et al. shows wherein the second fluid inlet (Fig. 1, I), second fluid plenum (PM) and the second nozzle (P) are arranged axially (W) in the apparatus.

Re claim 57 & 76, Williams et al. shows the transport plenum (Fig. 1, PM) is concentric with the apparatus axis.

Re claim 59 & 78, Williams et al. shows the second fluid inlet (Fig. 1, I) has a second fluid axis that is parallel to the apparatus axis.

Re claim 60 & 79, Williams et al. shows a first fluid plenum (Fig. 1, P) within the apparatus and located in the first fluid passage between the first fluid inlet (22) and the working nozzle (PO), wherein the working fluid plenum is annular and circumscribes the apparatus axis.

Re claims 61 & 80, Williams et al. shows a working fluid plenum (Fig. 1, P) that substantially circumscribes the transport nozzle.

Re claim 62, Williams et al. shows a working fluid plenum (Fig. 1, P) that substantially circumscribes the protrusion.

Re claims 63 and 81, Williams et al. shows the working nozzle (Fig. 1, PO) has inner and outer surfaces at the first fluid outlet, each being substantially frustoconical in shape, wherein the inner surface of the working nozzle faces outward away from the apparatus axis and the outer surface of the working nozzle faces inward toward the apparatus axis.

Re claims 64 & 82, Williams et al. shows wherein the working nozzle (Fig. 1, PO) substantially circumscribes the transport nozzle.

Re claim 65, Williams et al. shows wherein the working nozzle (Fig. 1, PO) substantially circumscribes the protrusion.

Re claims 67, 69, 84 & 86, Williams et al. discloses the claimed invention except for an included angle of 6 or 12 degrees. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to include an angle of 6 or 12 degrees, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Re claims 68 & 85, Williams et al. shows wherein the conduit comprises a mixing chamber (Fig. 1, nearest N), wherein the first fluid outlet (PO) and second fluid outlet (O) are connected to the mixing chamber.



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Re claims 70 & 87, Williams et al. shows wherein the transport nozzle (Fig. 1, O) is shaped with a convergent-divergent profile (S) to provide supersonic flow of the transport fluid which flows there through.

Re claims 72 & 89, Williams et al. shows to spray water droplets on the fire (abstract).

Re claim 73, Williams et al. shows an apparatus for generating a mist (Fig. 1), the apparatus having an apparatus axis and an outlet end (nearest N), the apparatus comprising: a first fluid passage (P) having a first fluid inlet (22) and a first fluid outlet (PO); the first fluid passage defining a first nozzle; the first fluid outlet being annular and concentric with the apparatus axis, the first fluid passage comprising a first annular portion concentric with the apparatus axis, the first annular portion having a first outer surface facing inward toward the apparatus axis and a first inner surface facing outward away from the apparatus axis; a second fluid passage (W) having a second fluid inlet (I) and a second fluid outlet (O); the second fluid passage defining a second nozzle; the second fluid outlet being annular and concentric with the apparatus axis, the second fluid passage comprising a second annular portion concentric with the apparatus axis, the second annular portion having a second outer surface facing inward toward the apparatus axis and a second inner surface facing outward away from the apparatus axis; wherein at least part of the second outer surface diverges away from the apparatus axis in a direction toward the outlet end; and wherein at least part of the second inner surface diverges away (10) from the apparatus axis in a direction toward

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the outlet end; and wherein the second fluid outlet is located between the first fluid outlet and the apparatus axis.

Williams et al. does not teach wherein at least part of the first outer surface converges toward the apparatus axis in a direction toward the outlet end.

However, Kinney et al. does teach wherein at least part of the first outer surface (Fig. 2, 13) converges toward the apparatus axis in a direction toward the outlet end.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the working nozzle of Williams et al. with the working nozzle of Kinney et al. to regulate the feed of material (page 2, lines 33-34).

Claims 66, 71, 83 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (US Pat No 5,779,159) in view of Kinney et al. (US Pat No 1,289,812) as applied to claim 1 above, and further in view of Pennamen et al. (5,810,252).

Re claims 66 & 83, Williams et al. does not show wherein the internal geometry of the transport nozzles has an exit area to throat area ratio, in the range of 1.75 to 15.

However, Pennamen et al. does teach wherein the internal geometry of the transport nozzles has an exit area to throat area ratio, in the range of 1.75 to 15 (column 2, lines 61-63).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the channels of Williams et al. with the ratio of Pennamen et al. to ensure an atomization orifice (column 2, lines 52-56).

Re claims 71 and 88, Williams et al. does show where the working fluid is water (column 3, lines 7-11).

Williams et al. does not teach steam.

However, Pennamen et al. does teach steam (column 2, lines 64-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the fluid of Williams et al. with the steam of Pennamen et al. to aide in atomization (52-55).

### ***Response to Arguments***

Applicant's arguments with respect to claims 52-89 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEVEN CERNOCH whose telephone number is (571)270-3540. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571)272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. C./  
Examiner, Art Unit 3752

/Len Tran/  
Supervisory Patent Examiner, Art Unit 3752